

IN THE CLAIMS:

1. (Currently Amended) An integrated circuit ~~(10)~~ provided with a substrate ~~(11)~~ and with a memory having a first heat-programmable memory element ~~(30)~~, which memory element ~~(30)~~ comprises:

a first electrode and a second electrode;

an electrically conducting bridge providing an electrical path between said first electrode and said second electrode;

wherein said electrically conducting bridge comprises an electrically conducting organic material, the bridge having both a non-programmed state and a programmed state, wherein in a non-programmed state the bridge comprises a first conduction state in which a conduction current level that flows through the organic material between the first electrode and the second electrode of the memory element below a transition temperature, and a programmed state comprises a second conduction state in which the current level flows through the organic material by at least a predetermined amount less than said first conduction current level when the organic material is above said transition temperature, wherein the organic material is programmed by heating the memory element to a said transition temperature that reduces conduction through predetermined portions thereof to;

~~— a first electrode (26) and a second electrode (28),~~

~~wherein the first (26) and the second electrode (28) are interconnected in the non-programmed state by an electrically conducting bridge (27) which comprises the organic material,~~

said bridge ~~(27)~~ is at least partly interrupted in the programmed state so that conduction therein is reduced from when said bridge was in the non-programmed state.

2. (Currently Amended) An integrated circuit ~~(10)~~ as claimed in claim 1, ~~characterized in that~~ wherein a first transistor ~~(20)~~ is present which during programming provides a voltage across the first memory element ~~(30)~~ so as to heat the first memory element.

3. (Currently Amended) An integrated circuit ~~(10)~~ as claimed in claim 1, further comprising an electrical conductor track ~~(23)~~ being arranged therein for limiting heat dissipation from the bridge, perpendicular projections of said conductor track ~~(23)~~ and of the bridge ~~(27)~~ on the substrate ~~(11)~~ overlapping each other.

4. (Currently Amended) An integrated circuit ~~(10)~~ as claimed in claim 1, ~~characterized in that~~ wherein the substrate ~~(11)~~ is a laminated product of a porous layer (1) and a covering layer (2).

5. (Currently Amended) An integrated circuit ~~(10)~~ as claimed in claim 1, ~~characterized in that~~ wherein the first memory element ~~(30)~~ has a spiraling ~~(91)~~ or meandering ~~(92)~~ shape.

6. (Currently Amended) An integrated circuit ~~(10)~~ as claimed in claim 1, ~~characterized in that~~ wherein the first memory element ~~(30)~~ is also programmable by optical means.

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7. (Currently Amended) An integrated circuit ~~(10)~~ as claimed in claim 2, ~~characterized in that~~ wherein a first patterned electrically conducting layer ~~(6)~~ is present on a substrate ~~(11)~~, in which layer the bridge ~~(27)~~ of the memory element ~~(30)~~ and a first transistor electrode ~~(21)~~ of the first transistor ~~(20)~~ are present.

8. (Currently Amended) An integrated circuit ~~(10)~~ as claimed in claim 7, ~~characterized in that~~ wherein the bridge ~~(27)~~ is adapted to function as a conductor track that limits heat dissipation by having a smaller width ~~(13)~~ than the first transistor electrode ~~(21)~~ of the first transistor (20) and than the first electrode ~~(26)~~ of the first memory element ~~(30)~~.

9. (Currently Amended) An integrated circuit ~~(10)~~ as claimed in claim 7, ~~characterized in that~~ wherein the first patterned layer ~~(6)~~ comprises an organic material chosen from the group of polyaniline and poly(3,4-ethylenedioxythiophene).

10. (Currently Amended) A transponder ~~(50)~~ comprising an integrated circuit ~~(10)~~ and an antenna ~~(40)~~, and an electrically conducting connection between the antenna ~~(40)~~ ~~characterized in that~~ wherein the integrated circuit ~~(10)~~ as claimed in claim 1 is present.

11. (Currently Amended) A security paper comprising an integrated circuit,
~~characterized in that~~ wherein the integrated circuit as claimed in claim 1 is present.

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12. (Previously Canceled).
